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Goddard Space Flight Center

Inside Wallops

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Arctic Ozone May Not Recover as Early as Predicted

The ozone layer that protects life on Earth may not be recovering from the damage it has suffered over the Arctic region as quickly as scientists previously thought.

More polar stratospheric clouds than anticipated are forming high above the North Pole, causing additional ozone loss in the sky over the Arctic, according to Dr. Azadeh Tabazadeh, scientist at NASA's Ames Research Center. The stratosphere comprises Earth's atmosphere from about 9 to 25 miles (about 15 to 40 kilometers) altitude and includes the ozone layer.

Polar Stratospheric Clouds

"The Arctic has become colder and more humid, conditions that promote formation of more polar stratospheric clouds that take part in polar ozone destruction. The main conclusion of our study is that if this trend continues, Arctic clouds will remain longer in the stratosphere in the future," Tabazadeh said.

"An ozone hole forms every spring over the Antarctic in the Southern Hemisphere which is colder than the Arctic," said Tabazadeh. "The Arctic has been getting colder and is becoming more like the Antarctic; this could lead to more dramatic ozone loss in the future over the Northern Hemisphere, where many people live."

Researchers used data from NASA's Upper Atmosphere Research Satellite to analyze cloud data from both the north and south polar regions for the study.

"What we found from the satellite was that polar stratospheric clouds currently last twice as long in the Antarctic as compared to the Arctic," Tabazadeh said. "However, our calculations show that by 2010 the Arctic may become more 'Antarctic-like' if Arctic temperatures drop further by about 37 to 39 degrees Fahrenheit (about 3 to 4 degrees Celsius)," she said.

When Arctic polar stratospheric clouds last longer, they can precipitate, removing nitrogen from the upper atmosphere, which increases the opportunity for chlorine compounds to destroy ozone more efficiently. The polar stratospheric clouds involved in the reactions contain nitric acid and water, according to researchers who discovered these clouds in 1986.

More than a decade ago, scientists determined that human-made chlorine and bromine compounds cause most ozone depletion. Manufacturers made the chlorine compounds, chloroflourocarbons or "CFCs," for use as refrigerants, aerosol sprays, solvents and foam-blowing agents. Fire fighters used bromine-containing halogens to put out fires.

Manufacture of CFCs ceased in 1996 in signatory countries under the terms of the Montreal Protocol and its amendments.

The Montreal Protocol bans CFC emissions. As a result, the chlorine concentration in the upper atmosphere is already starting to decline, according to Tabazadeh.

"Scientists used to believe that as chlorine levels decline in the upper atmosphere, the ozone layer should slowly start to recover. However, greenhouse gas emissions, which provide warming at the Earth's surface, lead to cooling in the upper atmosphere. This cooling promotes formation of the kind of polar stratospheric clouds that contribute to ozone loss," she added. "Several recent studies, including this one, show that ozone recovery is more complex and will take longer than originally thought," she explained.

This research was funded by the Office of Earth Sciences, NASA Headquarters, Washington, DC.

Wallops Shorts ----------

Balloon Launches

Two NASA scientific balloons were recently launched from Ft. Sumner, NM. The first was successfully launched on May 20. The 29.47 million cubic foot balloon carried an infrared astronomy experiment for the University of California, Santa Barbara. Dr. Philip Lubin was the principal investigator. Total flight time was 21 hours, 41 minutes.

The second balloon was launched on May 21 and experienced a failure during early ascent. The 39.57 million cubic foot balloon carried a cosmic and heliospheric physics experiment for the University of Chicago. Dr. Dietrich Muller was the principal investigator. The payload was recovered and is being evaluated for a potential reflight.

(left to right) Charlie Lipsett, Bonnie Maxfield, and Barbara Justis staff the Wallops exhibit at the 4th Grade Space Expo in Anne Arundle County, MD on May 24, which was also attended by Chuck Brodell and Mike Cropper.

Wallops Fire Department

Responses May 18 - May 25

Aircraft Stand-bys — 25
Ambulance Calls — 4
Fire Alarm — 1
Mutual Aid Assistance — 1
Ambulance call in Withams

Wallops Open House

June 24, 2000

9 a.m. to 5 p.m.

Celebrating Wallops Partners

NASA ***U.S. Navy***
NOAA ***U.S. Coast Guard***
Virginia Space Flight Center

Volunteers are needed for the children's activity tent, information booth and gate greeters. Please call Betty Flowers, x1584.

Wallops Health Line

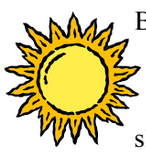
Skin Cancer

Years of frequent and prolonged exposure to ultraviolet radiation from the sun results in a variety of changes in the skin. While a darker complexion skin may seem to offer greater protection from acute sunburn, people of all complexions are susceptible to developing skin lesions resulting from the cumulative effects of sun exposure.

Photoaged skin results from chronic ultraviolet radiation and usually appears coarse, thicken and pebbly with prominent wrinkling. In extreme cases, the affected skin may have an irregular loss of pigmentation, easy bruising and the appearance of small, spidery blood vessels.

Skin cancers are the most serious result of chronic sun exposure. These include basal cell carcinoma, squamous cell carcinoma and malignant melanoma.

Malignant melanoma is the least common, but by far the most dangerous of the skin cancers. A melanoma can invade and/or spread to almost any other tissue in the body. If not diagnosed and treated early, malignant melanoma can result in death within months of appearance. Look for any changes in an existing mole, especially an increase in size or change in color. A melanoma can appear red (inflammation), white (loss of pigment, usually irregularly, due to attack by the body's immune system), and blue or black (increased pigmentation from the malignant cells). Consult your physician if you notice changes in a pre-existing mole, or the sudden appearance of a new mole. Early recognition and surgical removal of superficial lesions usually results in a complete cure.



Basal cell carcinomas are the most common of the skin malignancies. These typically present as a skin sore that does not heal. Left untreated, basal cell carcinomas will continue to expand in size causing destruction of normal skin structures. This can become permanently disfiguring, especially if they involve the nose or ears. Most benign skin lesions will heal within two weeks. If you have a sore that persists, contact your physician. Treatment usually involves surgically removing the involved area of skin.

Squamous cell carcinoma is much more likely than basal cell to spread to distant tissues if not treated early. The lesion may appear initially at a sun-exposed area of the skin but also may occur anywhere on the body, including the tongue and the lining cells of the mouth, respiratory tract, etc. The lesions are highly variable in appearance - they may be a small, red bump or a flattened, warty area. Eventually the lesions ulcerate and begin to invade the underlying tissue. It is not unusual for a squamous cell carcinoma to arise within an area of old scar tissue such as from a previous burn. Early recognition and surgical removal usually results in a complete cure.

The best treatment for all sun-related skin conditions is prevention.

- ✓ In all seasons, apply a sunscreen to exposed skin that protects against both UV-A and UV-B, with a sun protection factor (SPF) of 15 or greater even on cloudy days. Be aware that reflected sunlight, from water or snow surfaces, can be just as damaging as direct sunlight.

- ✓ Reapply sunscreen at least every 2 hours, especially if swimming or sweating.
- ✓ Stay in a shaded area as much as possible
- ✓ Wear protective, tightly woven clothing. Dark colors, long sleeves and long pants provide the best protection. A white, cotton, short-sleeved T-shirt provides surprisingly little protection.
- ✓ Wear a hat with a wide, circular brim to protect your face, scalp and neck.
- ✓ Wear sunglasses with ultraviolet protection. Tinted glasses with no ultraviolet protection are actually worse than no sunglasses. The diminished visible light allows the pupil to dilate and admit more of the damaging ultraviolet radiation. Malignant melanoma can develop in the retina of the eye.
- ✓ Stay out of tanning beds.

First Monthly Tail Gate Sale of 2000

June 7
Starts at 11:30 a.m.
Flag Court Parking Lot

Contractor, civil servant, and tenant employees are invited to participate. If you have something you want to sell, E-mail Terry Ewell by June 2: terry.ann.ewell.1@gsfc.nasa.gov

NASA Visitor Center Events Scheduled for June

June 3 and 17 — Model Rocket Launch
A model rocket launch will be held at 1 p.m. Models of various rockets will be launched. The launch will be canceled if it is raining or winds exceed 18 mph.

June 4 — Main Base Biking Tour
There will be a biking tour of the Wallops Main Base beginning at 3 p.m. The tour is 3 miles long and takes approximately an hour. Participants must bring their own bicycles, wear a helmet and sign up at the Visitor Center. The tour will be canceled if it is raining.

The Visitor Center is open from 10 a.m. to 4 p.m., Thursday through Monday. The complex is closed on Tuesday and Wednesday. Admission to Visitor Center programs is free. For further information, call (757) 824-2298.

Human Factors In Accident Investigation
Wallops Flight Facility
June 27 - 29, 2000
8 a.m. to 4 p.m.

This course is offered at no cost to NASA and contractor employees. Employees need to fill out the course registration form which requires a supervisors signature.

Additional information and course registration form can be found at: http://www.wff.nasa.gov/~code803/pdf/human_factors.pdf

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Steak Dinner
June 2
6:30 p.m.
Bldg. F-3

$15.00 per person

Menu: Steak (grilled to order), tossed garden salad, baked potato, corn-on-the-cob, bread, dessert and beverage

Tickets are available now. Call Sandy Gunter, x1454 or Pam Milbourne, x2020

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